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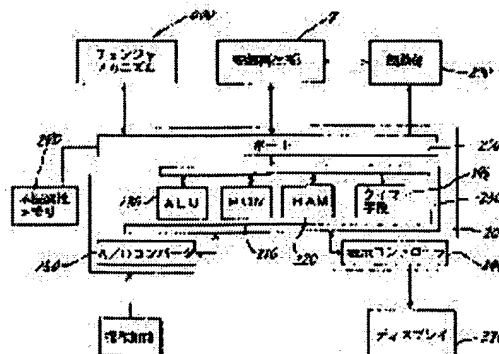
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(54) DISK RECORDING/REPRODUCING APPARATUS AND DISK LOADING/ UNLOADING REGULATION

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent occurrence of theft of a disk to be accommodated in a disk recording/reproducing apparatus at a shop by prohibiting exchange of disk by a person other than the regular user by restriction by a password of loading/unloading of disk.

SOLUTION: When a password as a secret number is set and registered to a processor 200 by operating the ten key and then a lock key is depressed, the apparatus is set to a lock mode, and a logical arithmetic unit ALU280 stores that the password and apparatus are shifted to the lock mode to a non- volatile memory 290 and issues an instruction to a disk changer mechanism 400 to stop the power feeding of the motor and closes an aperture of a rotating shutter. For the canceling of the lock mode, a user operates the ten key, inputs the password the depresses the lock key. Thereby, ALU280 compares the input password with the password stored in the non-volatile memory 290. When these are matched, the lock mode is canceled. Thereby, it can be prevented that a third party unloads the disk from the



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention holds two or more disks which are record media, and relates to the so-called autochanger type of disk record regenerative apparatus and the disk in-and-out regulation approach of carrying out record playback of the desired disk.

[0002]

[Description of the Prior Art] The disk of two or more sheets is stood and held from the former, and the record regenerative apparatus of the autochanger type which carries out record playback of the desired disk is proposed variously. The equipment which an applicant also shows to drawing 20 thru/or drawing 22 is proposed (refer to JP,6-309757,A). In the following publications, let the disk path of insertion into the front, and let a disk eject direction be back. This equipment prepared the magazine (3) which can hold the disk D of two or more sheets free [rotation] on the chassis (2) within the body (100) of equipment, and the injection discharge section (4) and the record playback section (7) were mutually detached on the outside of the rotation shift way of a magazine (3), and it arranges them on it. 24 disk hold space (31) and (31) are formed in the magazine (3) at the radial, and where Disk D is stood, it can hold in each hold space (31).

[0003] The injection discharge section (4) prepares the roller unit (6) which carries out pinching conveyance of the disk between the outside of the body (100) of equipment, and a magazine (3), and sensor means (SE3) - (SE8) which detects passage of a disk is prepared in the side of this roller unit (6). The identification number to No.1-24 is given to each disk hold space (31), respectively, and each identification number is memorized by the processor (200) connected to the front panel (20) of the body (100) of equipment. If a disk is inserted in the injection discharge section (4), passage of a sensor means (SE3) and a disk will be detected by - (SE8), and the passed disk will go into the disk hold space (31) of the magazine (3) which countered the injection discharge section (4). A processor (200) memorizes that the disk was inserted in this disk hold space (31) based on the signal from sensor means (SE3) - (SE8).

[0004] The display (330) which displays operating state etc. is prepared in the front panel (20), and as shown in this display (330) at drawing 22, the display (300) which comes to arrange the segment (310) which surrounded the identification number of each disk hold space (31) with the radii-like disk border line is prepared in it. A processor (200) makes the segment (310) corresponding to the identification number of the disk hold space (31) where the disk was thrown in turn on. If the segment (310) is on, the disk is contained in the disk hold space (31) of the number concerned in a magazine (3). If the segment (310) has gone out, a disk does not go into the disk hold space (31) of the number concerned in a magazine (3), but it is empty.

[0005] In case a user samples a disk from the inside of the body (100) of equipment, he looks for the disk hold space (31) containing a disk from the contents of a display of each segment (310) of a display (300), and inputs into the front panel (20) the purport which samples the identification number and disk of this disk hold space (31). After a magazine (3) rotates and the disk hold space (31) of this identification number counters the injection discharge section (4), a disk is pinched by the roller unit (6)

and a disk is discharged.

[0006]

[Problem(s) to be Solved by the Invention] In the above-mentioned record regenerative apparatus, disk hold space (31) is specified, and if the purport which samples a disk is inputted, anyone can sample a disk. Therefore, while using this record regenerative apparatus at the shop front which unspecified people can come into, equipment is operated and there is a possibility that the disk in a magazine (3) may be stolen. Therefore, it is desirable considering facilities, such as disk-swapping, for the owner of equipment etc. to be able to cancel this lock out easily with a certain means, although it is necessary to blockade the shift way of the disk of the injection discharge section (4). This invention aims at preventing the theft of a disk and offering equipment with easy exchange of a disk etc. for the user of normal.

[0007]

[Means for Solving the Problem] The magazine in which two or more disk hold space (31) contained after the disk record regenerative apparatus has stood the disk was formed (3), The front panel which is established in the outside of a magazine (3) and has various actuation keys (20), The shutter means equipped with opening (41) which is prepared in this front panel (20) and allows passage of the disk from the outside of the body (100) of equipment to a magazine (3), It has the motor (M1) which opens and closes opening (41) of a shutter means, and the processor (200) which controls rotation of a motor (M1). The front panel (20) is connected to the nonvolatile memory (290) which the password which is a password sign can be entered, and a processor (200) can store a password, and continues holding the contents of storing also at the time of power-source cutoff. Where a password is stored in nonvolatile memory (290), unless it sets the body (100) of equipment as a lock mode and the same password as the stored password is entered, a processor (200) stops energization of a motor (M1), and continues blockading opening (41) of a shutter means.

[0008]

[Function and Effect] If setting registration of the password is carried out, it shifts to a lock mode, and in this lock mode, unless the same password as the stored password is entered, a processor (200) stops energization of a motor (M1), and continues blockading opening (41) of a shutter means. Therefore, those who do not know a password can prevent removing a disk from the inside of a magazine (3), and there is effectiveness of disk theft prevention. Furthermore, since a lock mode is canceled by entering the same password as the stored password, for the user of normal who knows the password, it can cancel a lock mode easily and can perform exchange of a disk etc. easily.

[0009]

[Embodiment of the Invention]

(The whole outline) An example of this invention is hereafter explained in full detail using drawing. Although this invention makes an example the disk which carries out record playback of the music and explains it, it cannot be overemphasized that it can apply also to other disks (digital videodisc), for example, DVD which carries out record playback of the image, and CD-ROM. Drawing 1 is the perspective view of the body (100) of equipment. The processor (200) which consists of a microcomputer is connected to the front panel (20) established in the front face of a chassis (2) as usual. A rotating disc shutter (40) is prepared in the center section of this front panel (20), and opening (41) which Disk D passes is formed in the center section of this rotating disc shutter (40).

[0010] The display (330) in which the hold condition of a disk etc. is shown is prepared in the left-hand side of opening (41), and the transparent window (150) which can see the interior of the body (100) of equipment is prepared in it on the right-hand side of opening (41). The play button (170) pushed at the time of the stop button (160) pushed on it in case the memory key (520) operated in case the ten key (500) to which loading / EJEKUTO ** (130), the figure, and the alphabet which are operated in case Disk D is taken in and out in the body (100) of equipment were given, and the group name to which a disk belongs are inputted, the lock key (580), and the actuation which carry out a postscript be suspended in the front panel (20), and a disk performance be prepared. Here, with a group name, the category name of the music fields, such as jazz to which a disk belongs, and a classic, and the artist

name which did so the music recorded on the disk are mentioned.

[0011] Drawing 2 is the front view of the front panel (20). The cursor key (510) (510) is prepared between the display (330) and the memory key (520). It comes clockwise to put in a row the category / artist key (540) which is ** of the shape of four triangle on the right-hand side of a cursor key (510) (510), a rise key (550), a title key (560), and a down key (570). It is operated in order that a rise key (550) and a down key (570) may display a category name or an artist name in order, and a title key (560) is used in order that a user may input the title of a disk.

[0012] A display (330) equips the right-hand side with the character representation column (340) for the number annunciator (350) with which the identification number of disk hold space (31) is displayed on a left end corner. The playback time amount of a disk, the track number under playback, etc. are displayed on the character representation column (340). The title display column (390) as which the title of a disk is further displayed for the category / the artist display column (370) as which the group name of a disk is displayed on the bottom of it is prepared in the character representation column (340) bottom. The display (300) which comes to put in a row two or more segments (310) (310) which can be turned on to this alignment on the right-hand side of a category / the artist display column (370) is prepared. The lock segment (380) which shows that injection discharge of a disk is impossible is prepared in the diagonal left side of a display (300).

[0013] Drawing 3 is the block diagram showing the interior of the body (100) of equipment. It connected with the A/D converter (250) in a processor (200), and a ten key (500), and loading / EJEKUTO ** (130) have connected this A/D converter (250) to a timer means (295) to time the elapsed time after information is inputted, and a logic unit (ALU) (280), in order to detect RAM (220) which once stores information, and the mode which should shift through a bus line (230). ALU (280) and RAM (220) are connected to a changer mechanism (400), the record playback section (7) which plays a disk, and the circuit section (270) which controls actuation of this record playback section (7) through the port (260) which is an outgoing end. In this example, actuation of the record playback section (7) and the circuit section (270) is well-known, and detailed explanation is omitted. The display (330) is connected to the bus line (230) through the display controller (240). The signal from the operating button and RAM (220) of the front panel (20) is transmitted also to a display (330). Even if a power source is intercepted by the port (260), the nonvolatile memory (290) for memorizing information is connected to it. A predetermined group name and a predetermined password are beforehand stored in nonvolatile memory (290). Here, a password is a password alphabetic character which only the user has memorized, it is setting up a password, and those who do not know a password prevent taking a disk in and out.

[0014] This example is setting up a password, and the description is in the point that unspecified people have the anti-theft function which cannot remove a disk from a changer mechanism (400), and it explains a changer mechanism (400) first. As shown in drawing 1 and drawing 4, it has a changer mechanism (400) for the duplex tubed magazine (3) which can hold the disk D of two or more sheets on a chassis (2) at a radial, enabling free rotation, and it is equipped with the record playback section (7) in the inside space of a magazine (3). The injection discharge section (4) is prepared inside the front panel (20) as usual on the outside of the rotation shift way of a magazine (3). The injection discharge section (4), the record playback section (7), and the center of rotation of a magazine (3) are located on a straight line. Within the injection discharge section (4), the 1st roller unit (6) which pinches and conveys a disk is prepared in the shift on the street of a disk, and the 2nd and 3rd roller unit (60) which pinches a disk similarly, and (61) are prepared in it along the disk injection direction between the wall of a magazine (3), and the record playback section (7).

[0015] The motor (M1) made to rotate a magazine (3) is arranged, and the motor (M3) which gives rotation driving force to the three above-mentioned roller units (6), (60), and (61) is formed in the outside of the rotation shift way of a magazine (3) at the centrum of a magazine (3). The rotational motion force from a motor (M3) is transmitted to the 2nd and 3rd roller unit (60) and (61), and also it is transmitted to the 1st roller unit (6) through a gear train (67). In case it energizes on a motor (M3), the 1st roller unit (6) is rotated and a disk is drawn in a magazine (3), said loading / EJEKUTO ** (130) are

operated. The lower limit section of a magazine (3) fits into the annular support column (21) set up on the chassis (2) free [rotation], and the notch (28) which allows passage of a disk is established by some support columns (21). A magazine (3) is laid in two or more receptacle tires (22) arranged at the chassis (2), and rotates the surroundings of a support column (21).

[0016] Drawing 5 is a perspective view in the condition of having made the magazine (3) into vertical reverse and having turned the base the top. A magazine (3) forms in a radial two or more disk hold space (31) which can be held as usual where a disk is stood, and (31), carries out opening of each hold space (31) order both ends to the outer wall and wall of a magazine (3), and forms the slit hole which allows passage of a disk. An annular tooth flank (35) is formed in the inferior-surface-of-tongue periphery of a magazine (3), and the 1st rib ring (33) of a magazine (3) and this alignment is prepared in the inferior surface of tongue of a magazine (3). The transparent window (36) of disk hold space (31) and the same number is established at equal intervals by the 1st rib ring (33).

[0017] 150 disk hold space (31) is established in a radial in all, and where a magazine (3) is attached in a chassis (2), the slot numbers from No.1 to No.150 are counterclockwise given to the magazine (3) in this example in each disk hold space (31). Six adjacent disk hold space (31) and (31) are defined as one block (320), and all disk hold space (31) is divided into the block (320) of 25. The display (300) of the display (300) shown in drawing 2 is equipped with 25 segments (310), and each segment (310) displays the disk existence information on the disk main space (31) within this block (320) corresponding to a block (320). If the disk is contained in which disk hold space (31) within this block (320), specifically, a corresponding segment (310) will light up.

[0018] Drawing 6 is the top view showing the magazine rolling mechanism (5) established on the chassis (2). Through a belt (54), two two-step gearings (50), and (51), said motor (M1) is coordinated with the annular tooth flank (35) of a magazine (3), and rotates a magazine (3) according to the input from the front panel (20). The sensor means (SE1) equipped with the photo coupler of a pair is formed in the rotation shift on the street of the 1st rib ring (33) of a magazine (3), and a sensor means (SE1) detects a transparent window (36) with rotation of a magazine (3). When the transparent window (36) of a magazine (3) detects passage of the following transparent window (36) after detecting passage of one transparent window (36) since only the same number as disk hold space (31) is prepared at equal intervals, it turns out that the magazine (3) rotated by one pitch of disk hold space (31).

[0019] In addition, although illustration is not carried out, the tooling holes used as criteria are established by the magazine (3), and it is detecting the tooling holes which start during magazine (3) rotation, and it turns out that the disk hold space (31) which countered the injection discharge section (4) deals with 1 of an identification number. Therefore, it is stored in RAM (220) after magazine (3) rotation by detection of these tooling holes, and the number of the transparent windows (36) which the sensor means (SE1) detected during magazine (3) rotation of which identification number disk hold space (31) has countered the injection discharge section (4).

[0020] It is the top view in which drawing 7 (a) shows the aperture condition of a rotating disc shutter (40), and drawing 7 (b) shows the closing condition of a rotating disc shutter (40), respectively. A rotating disc shutter (40) is prepared free [rotation] in the front panel (20), and is counterclockwise energized with the **** spring (47). On a chassis (2), a shutter closing motion slide (45) is formed in right and left free [sliding], the protruding piece (46) projected from the rotating disc shutter (40) to this shutter closing motion slide (45) touches the front panel (20) inside, and, as for a rotating disc shutter (40), rotation is controlled. A rotating disc shutter (40) turns opening (41) to a transverse plane, when throwing in a disk. A shutter closing motion slide (45) resists a **** spring (47), and after a disk injection rotates push and a rotating disc shutter (40) for a protruding piece (46) clockwise, and closes opening (41). Although a shutter closing motion slide (45) is driven by the same motor (M1) as rotating a magazine (3), it omits detailed explanation about the drive of a shutter closing motion slide (45).

[0021] Drawing 8 is the right side view of the injection discharge section (4). As for the injection discharge section (4), the sensor substrate (42) is set up by the both sides of this 1st roller unit (6) including said 1st roller unit (6). On this sensor substrate (42), six sensors means (SE3) - (SE8) which detects passage of a disk is prepared. - (SE6) arranges six sensor means in four sensor means (SE3) and

length 1 train, and remaining two sensor means (SE7) (SE8) arrange them inside the 1st roller unit (6). Thus, many sensors are formed for that whose diameter is 12cm, and the thing whose diameter is 8cm being in the disk thrown in, and detecting insertion of two kinds of these disks. The applicant is indicating this detail by JP,6-195842,A before.

[0022] (Disk injection) The following actuation is performed when throwing in a disk in a magazine (3) at the beginning. The outline of this actuation is shown in the flow chart of drawing 9. In an energization condition, the identification number of the disk hold space (31) which countered the injection discharge section (4) is displayed on the number indicating lamp (350) of the display (330) shown in drawing 2. If the disk is not contained in this disk hold space (31), since it is displayed on the character representation column (340) of a display (330) as "NO DISC", a user pushes loading / EJEKUTO ** (130), after checking the "NO ** DISC" display (S1).

[0023] The alphabetic character of "LOAD DISC" is displayed on a category / the artist display column (370), and a user throws a disk into opening (41) shown in drawing 7 (S2). - (SE6) detects existence of a sensor means (SE3) and a disk, and energizes it on a motor (M3). If the 1st roller unit (6) rotates in the direction of disk level luffing motion and a sensor means (SE7) (SE8) detects passage of a disk, a processor (200) will be told about the disk having been held in the disk hold space (31) which countered the injection discharge section (4). Since the identification number of the disk hold space (31) which countered the injection discharge section (4) is memorized by RAM (220), it is memorized by it that the disk was thrown in in this disk hold space (31).

[0024] If an injection of the disk to disk hold space (31) is completed, it will be displayed on the category / the artist display column (370) of a display (330) that the character string of "ENTER CATEGORY" flows leftward (S3). While this character string is displayed twice in succession and the character string is displayed, when any input cannot be found, a category name is not attached from the front panel (20).

[0025] If the category / artist key (540) shown in drawing 2 are operated once while being displayed as "ENTER CATEGORY", the category registered into nonvolatile memory (290) will be displayed on the category / the artist display column (370) of a display (330) through a bus line (230) and a display controller (240). In addition, although the following publications show the actuation of explanation registered according to a category name for convenience, the same is said of the procedure registered an artist name exception and according to a title. Whenever the contents displayed on a category / the artist display column (370) operate a rise key (550) or a down key (570), they change. An applicant has proposed displaying ten sorts of music fields on the alphabetical order of an initial until he begins from CLASSICAL and C/W (country western) and results in R/B (rhythm and bluce) and SHOW turn music as contents displayed whenever a rise key (550) is pressed.

[0026] In addition, actuation of a category / artist key (540) twice displays an artist name on a category / the artist display column (370). Moreover, a category name can operate a ten key (500), can select the alphabet, and a user can also input it. Since 1 of a figure will be displayed if 1 of a ten key (500) is operated once when two thru/or the three alphabet are assigned with the figure, for example, Alphabet A is inputted, Alphabet A will be chosen as each ten key (500) if it pushes further once again. If a cursor key (510) is pushed, the selected alphabet can be decided, the above-mentioned actuation can be repeated, and a character string can be inputted.

[0027] A user's selection of a desired category name operates a memory key (520). The existence information and the selected category of a disk are stored in the table of the identification number of the disk hold space (31) prepared in RAM (220) and nonvolatile memory (290) by ALU (280) (refer to drawing 10). Even if a power source is intercepted like the above, it stores in nonvolatile memory (290) for enabling it to read the existence information and the selected category of a disk. After a category input rotates a magazine (3) and repeats the above-mentioned actuation. That is, a disk is thrown in one after another in a magazine (3), attaching a category name (S4). In the condition of having attached the category and having carried out the completion of an injection of the disk into the magazine (3), if a category / artist key (540) is pressed and a category name is displayed, as smeared away and shown in drawing 11, the segment (310) corresponding to the block (320) including the disk hold space (31)

where this category was attached will light up. Therefore, it turns out that the disk hold space (31) where this category was attached in this block (320) exists.

[0028] Like the above, the equipment involved in this example is setting up a password, and the description is in the point which can shift to the lock mode from which unspecified people cannot remove a disk, and it shows the shift procedure to this lock mode using the flow chart of drawing 12. Where a disk is thrown in in a magazine (3), first, pushing a lock key (580) is continued 5 seconds or more (S10). If the pushed time amount is 5 or less seconds, it will not be set to a lock mode. If a timer means (295) detects the input for 5 seconds or more, that will be told to ALU (280), if this ALU (280) checks that the password is not yet set up (S11), this ALU (280) will display it on a category / the artist display column (370) as "ENTER PASSWORD" through a display controller (240), and a password input will be required (S12). If the password is already set up, it shifts to step S15, and the character string of "ENTER PASSWORD" will not be displayed, but it will perform actuation shown in the flow chart of drawing 15 so that a postscript may be carried out.

[0029] Whenever a user operates a ten key (500) and inputs the alphabet, he pushes a cursor key (510), and he constitutes the character string of a password on a category / the artist display column (370). The number of these passwords is a maximum of eight. If a lock key (580) is pushed after a password configuration (S14), equipment will be set as a lock mode (S15). While a lock segment (380) lights up, the alphabetic character of "LOCKED" is displayed on a category / the artist display column (370) for about 1 second. ALU (280) stores that a password name and equipment shifted to nonvolatile memory (290) at the lock mode. Moreover, an instruction is emitted in a changer mechanism (400), energization of a motor (M1) is stopped, and opening (41) of a rotating disc shutter (40) is closed.

[0030] In the lock mode, the password was entered, and if the this entered password was not the same as that of what was stored in nonvolatile memory (290), even if it operated loading / EJEKUTO ** (130) of the front panel (20), a motor (M1) will not rotate but will have closed the rotating disc shutter (40). Therefore, receipts and payments of a disk cannot be performed. This actuation is shown in the flow chart of drawing 13. Moreover, modification of the locked category name, an artist name, and a title name is also forbidden. This actuation is shown in the flow chart of drawing 14. Furthermore, since the purport set as the password and the lock mode is stored in nonvolatile memory (290), the contents stored even after intercepting a power source are held. Thus, if the body (100) of equipment is set as a lock mode, those who do not know a password cannot remove a disk. However, it is only being unable to perform receipts and payments of a disk, and it is possible to play a disk.

[0031] In canceling a lock mode, the flow chart **** procedure shown in drawing 15 performs. First, a lock key (580) is pushed 5 seconds or more (S20). The character string of "ENTER PASSWORD" is displayed on a category / the artist display column (370) (S21). A user operates a ten key (500), enters a password (S22), and pushes a lock key (580) (S23). ALU (280) compares the entered password with the password stored in nonvolatile memory (290) (S24), and if both passwords are the same, it will cancel a lock mode (S25). That is, the information on the purport set as the lock mode stored in nonvolatile memory (290) is eliminated. However, a password name is stored. A lock segment (380) is switched off and the character string of "UNLOCKED" is displayed on a category / the artist display column (370). If both passwords are not in agreement, it returns to step S21 and "ENTER PASSWORD" is expressed as step S24.

[0032] When a lock mode is canceled and it is again set as a lock mode, a lock key (580) is pushed. Since the password set up before is stored in nonvolatile memory (290), ALU (280) reads this password and sets it as a lock mode. When stopping a setup to a lock mode during an input of a password, a stop button (160) is pushed or the energization condition to the body (100) of equipment is intercepted. When resetting a password, or although he forgets a password, a lock key (580) is pushed in the state of OFF of a power source to cancel a lock mode. The body (100) of equipment is changed into an energization condition, continuing pushing this lock key (580). ALU (280) eliminates the information on the purport set as the password name and lock mode which were stored in nonvolatile memory (290).

[0033] Thus, it can prevent that those who do not know a password remove a disk from the inside of the body (100) of equipment by carrying out setting registration of the password. The effectiveness of this

disk theft prevention is large at the shop front which unspecified people frequent especially. In addition, as for the password, not only a character string but the figure may be included. Moreover, although the password was made into a maximum of eight characters, it cannot be overemphasized that eight or more characters or eight characters or less are sufficient as the maximum number of letters.

[0034] It not only can set the whole body (100) of equipment as a lock mode, but with the equipment involved in this example, it can set it up according to a category or an artist at a lock mode. This actuation is shown using the flow chart of drawing 16. In addition, although the case of explanation where it is set as a lock mode is explained according to a category for convenience, it is also the same as when setting up an artist exception or according to a title. first -- beforehand -- disk hold space -- (-- the category name is given to every 31). The procedure which attaches a category name is as aforementioned.

[0035] Next, the category / artist key (540) and rise key (550), or down key (570) of the front panel (20) is pressed, and a category name is chosen (S31). If a desired category is chosen, pushing a lock key (580) is continued 5 seconds or more (S32). A check of that the password is not yet set up displays the character string of "ENTER PASSWORD" (S34). (S33) If a password is entered (S35) and a lock key (580) is pushed (S36), it will be set as a lock mode for every category (S37).

[0036] The category name which should be canceled first is chosen (S40), and pushing a lock key (580), as shown in the flow chart of drawing 17 in order to cancel the lock mode for every category is continued 5 seconds or more (S41). The character string of "ENTER PASSWORD" is displayed on a category / the artist display column (370) (S42). If a password is entered (S43) and a lock key (580) is pushed (S44), it judges whether the entered password of ALU (280) is the same as the already stored password (S45), and if in agreement, a lock mode will be canceled about this category (S46). If not in agreement, the character string of return and "ENTER PASSWORD" is displayed on step S42.

[0037] In choosing the category as which the lock mode is not chosen and taking a disk in and out, as shown in the flow chart of drawing 18, a category / artist key (540) and a rise key (550), or a down key (570) is pressed first, and a category is chosen (S50) and it pushes loading / EJEKUTO ** (130) (S51). ALU (280) judges the existence of the category set as the lock mode (S52), if there is no category set as the lock mode, will rotate the 1st roller unit (6) and will change a disk into the condition in which injection discharge is possible (S54). The category inputted when there was a category set as the lock mode judges whether it is a category concerning a lock mode (S53), and if it is a category concerning a lock mode, injection discharge actuation of a disk will not be performed. When the inputted category differs from the category concerning a lock mode, it shifts to step S54 and injection discharge actuation of a disk is performed.

[0038] When the category name which should newly be set as a lock mode is inputted, the procedure shown in the flow chart of drawing 19 is performed. In case a user throws a disk into disk hold space (31), he chooses a category name and pushes a memory key (520) (S60). ALU (280) judges the existence of the category set as the lock mode from nonvolatile memory (290) (S61), and if there is no category set as the lock mode, it will attach and register the category name chosen as the disk hold space (31) of this identification number (S63). If there is a category set as the lock mode, the inputted category will judge whether it is the same as that of the category already set as the lock mode (S62). If the inputted category is a category set as the lock mode, since a category will be registered into a duplex, actuation which attaches the category name chosen as disk hold space (31) will not be performed. This category will be registered into disk hold space (31) if the inputted category is not the same as that of the already set-up category (S63).

[0039] Thus, not only said theft prevention but disk management for every user can be performed by setting it as a lock mode for every category. For example, a password which the music of the field from which everybody differ, respectively is fond, comes out in a family, and is different for every category in a certain case is set up, and it can avoid making the disk with which its favorite music was recorded on other persons touch. Moreover, a small child removes accidentally the disk with which its favorite music was recorded, and a possibility of damaging a disk can also be prevented.

[0040] Explanation of the above-mentioned example is for explaining this invention, and it should not

be understood so that invention of a publication may be limited to a claim or the range may be ****(ed). Moreover, as for each part configuration of this invention, it is needless to say for deformation various by technical within the limits given not only in the above-mentioned example but a claim to be possible.

[Translation done.]